SUPERIOR COURT OF CALIFORNIA

COUNTY OF SAN FRANCISCO

Case Number: 312610

----------)
LAWRENCE LUCIER and LAURIE LUCIER,)
)
Plaintiff(s),)
)
VS.)
)
PHILIP MORRIS, INCORPORATED, et al.,)
)
Defendant(s).)
)
----------)

DEPOSITION OF ARNOLD T. MOSBERG, PH.D., D.A.B.T.

(Taken by Plaintiff(s)

Winston-Salem, North Carolina

Friday, January 24, 2002

Reported in Stenotype by
Dorothy M. Boggs, RPR
Transcript produced by computer-aided transcription

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf
Source: https://www.industrydocuments.ucsf.edu/docs/lghl0001

APPEARANCES

ON BEHALF OF PLAINTIFF(S):

ROBERT M. BROWN, Esquire
WARTNICK, CHABER, HAROWITZ & TIGERMAN
101 California Street, Suite 2200
San Francisco, CA 94111
(415) 986-5566

ON BEHALF OF DEFENDANT(S):

WILLIAM E. LATHAM, II, Esquire
WOMBLE, CARLYLE, SANDRIDGE & RICE
200 West Second Street
Post Office Drawer 84
Winston-Salem, North Carolina 27102
(336) 721-3765
-and-
DEBORAH ANN SMITH, Esquire
SHOOK, HARDY & BACON, L.L.P.
One Kansas City Place
1200 Main Street
Kansas City, Missouri 64105-2118
(816) 474-6550
-and-
OTIS MCGEE, JR., ESQUIRE
SHEPPARD, MULLIN, RICHTER & HAMPTON, L.L.P.
Seventeenth Floor
Four Embarcadero Center
San Francisco, California
94111-4196
(415) 434-9100

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf
Source: https://www.industrydocuments.ucsf.edu/docs/lghl0001

DEPOSITION OF ARNOLD T. MOSBERG, PH.D., D.A.B.T., a witness called on behalf of Plaintiff(s) before Dorothy M. Boggs, Registered Professional Reporter and Notary Public, at the Law Offices of Womble, Carlyle, Sandridge & Rice, 200 West Second Street, Winston-Salem, North Carolina, on Friday, January 24, 2002, commencing at 10:30 a.m.

INDEX TO WITNESS

ARNOLD T. MOSBERG, PH.D., D.A.B.T. PAGE

BY MR. BROWN 4

BY MR. LATHAM 109

CERTIFICATE OF REPORTER 114

INDEX TO EXHIBIT(S)

FOR THE DEFENDANT(S): PAGE

EXH. 1 - Rough Sketch, Consisting of One Page . . 23

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

PROCEEDINGS

ARNOLD T. MOSBERG, PH.D., D.A.B.T.,

having been first duly sworn, was examined and testified as follows:

EXAMINATION

BY MR. BROWN:

Q. Dr. Mosberg, would you state your full name for the record, please?

A. I'm Arnold Mosberg.

Q. Let me move my laptop computer so you have a chance to confront your accuser, so to speak, so to speak.

A. Yes, sir.

Q. Just looking at the designation, and it would be my educated guess that you're essentially a toxicologist?

A. I am, sir.

Q. And your education includes a Master's and a Ph.D. at Ohio State?

A. That's correct.

Q. In toxicology?

A. Then biomedical engineering and physicology.

Q. And you've been offered up to testify to some five items which were in the designation. Did

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf www.industrydocuments.ucsf.edu/docs/lghl0001

you ever have a chance to read your designation?

A. Yes, I did have that opportunity --

Q. And I assume you -- I'm sorry.

A. I'm sorry. I did have that opportunity.

Q. And I assume that all five of those you would agree you're ready today to testify about?

A. I am ready.

Q. After you finished your undergraduate --

A. Uh-huh.

Q. – education which was where? Is that Ohio State too?

A. That too was at Ohio State, yes.

Q. What full-time employment, if any, did you have before you came to R. J. R.?

A. Well, I worked for the General Electric Company.

Q. Give us a brief idea of what you did and how long and so forth.

A. I worked there as an aeronautical engineer, an expert in aerodynamics and fluid dynamics, and involved myself merely with the design of combustion systems, the mixing of fuels and airs and burning them to create power and gas turbine engines.

Q. Was that helpful in your work that you've been doing at R. J. R.?

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

A. It does help me.

Q. Something to do with the aerosols --

A. Yes, I think a fundamental part of understanding the aeronautical engineering discipline was the understanding of aerosols, and of course, that was compiled with later education that I had specifically in the field of physiology and aerosols.

Q. Was that your last employment before R. J. R.?

A. Well, I worked for some time with the Ohio State University as I was a graduate student, but then I moved on to an organization known as Battelle Columbus Laboratories.

Q. Battelle?

A. Yes.

Q. How long were you with Battelle?

A. I think about eight years.

Q. And what did you do there?

A. I was both for a time a biomedical engineer and as a toxicologist and a leader in their inhalation toxicology efforts through 1985.

Q. Did you do work which was related to R. J. R. at that time?

A. There was a time in which people at Battelle did work, but I didn't work specifically with

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

R. J. Reynolds --

Q. Did --

A. – but others did have some contracts with R. J. Reynolds during the time that I worked at Battelle.

Q. Did you do any work that was commissioned or retained at Battelle for cigarettes?

A. No.

Q. So that your first cigarette engineering experience would have been at R. J. R.?

A. By then, I was practicing as a toxicologist in inhalation toxicology, but that's correct. My first experiences with toxicology and cigarette smoke was at R. J. Reynolds.

Q. After Battelle, then what did you do?

A. I moved directly from Battelle to R. J. Reynolds.

Q. What year was that?

A. It was in December of 1985.

Q. And where were you assigned? What department or your division or what --

A. I think it was the -- you know, I'm not too sure about that. I'd have to consult my C. V. right now, but it was in the biological sciences area, working with Dr. Burger and Dr. Hayes.

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

Q. Did you remain in that, or have you remained in that area?

A. I've remained in the areas of biological sciences, but as we moved through different promotions and different responsibilities, the names of the groups have changed, and of course, my responsibilities have become increasingly great over that time.

Q. What is your title now?

A. I'm the vice-president of regulatory toxicology.

Q. What does that involve? What are your duties involved with that?

A. Well, there are many. I have four divisions that work directly with me, divisions including inhalation toxicology and animal biology; another division of industrial and environmental toxicology; a division of scientific and regulatory affairs; and another division, product stewardship and toxicology assessment. They have a broad range of responsibilities in the field of biological sciences and toxicology.

Q. Each of those groups report to you?

A. That's correct.

Q. You're their boss, so to speak?

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

A. I work with them, and yes, I am their boss, I guess.

Q. Would you go through each one of those again and tell me who is the direct boss of each of those groups?

A. Okay. The first one I mentioned was inhalation toxicology and animal biology, and that is headed up by a director, and that director is Dr. Paul Ayres.

Q. How do you spell Ayres?

A. A-Y-R-E-S.

(Off-the-record conference.)

BY MR. BROWN:

Q. So you have inhalation is first, and what was the next one?

A. I'm not sure what order I gave them to you in --

Q. That's all right.

A. -- but another one is industrial and environmental toxicology.

Q. And the boss of that one is?

A. Dr. Charles Garner is the director of that organization.

Q. G-A-R-N-E-R?

A. That's correct.

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

Q. Next?

A. The next one is scientific regulatory affairs.

Q. And that's run by?

A. Dr. Jim Swauger.

Q. How do you spell his last name?

A. His name is spelled S-W-A-U-G-E-R.

Q. I'm sorry. I got – S-W what?

A. S-W-A-U-G-E-R.

Q. First name?

A. Jim.

Q. Jim. Is there one more?

A. Yes.

Q. Okay.

A. And that organization is product stewardship and toxicology assessment.

Q. And product assessment?

A. Product stewardship and toxicology assessment.

Q. Toxicology. Sorry. And that's run by whom?

A. Again, a director, Dr. Deborah Pence, P-E-N-C-E.

Q. And all of these organizations have a director?

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf www.industrydocuments.ucsf.edu/docs/lghl0001

A. That's right, yes.

Q. And then they report to a vice-president, and that's you?

A. That's me.

Q. By being responsible for those four, you call them groups?

A. We call them divisions at our company.

Q. Divisions. Okay. Of those four divisions, would you then be the senior scientist at R. J. R. responsible for biological research into the R. J. R. products?

A. Yes, I would.

Q. And how long have you had that position?

A. That responsibility is reasonably new to me. It's, I think, last year, March of 2001, is when I started at that position.

Q. Have you ever testified in any R. J. R. cases?

A. No, I have not.

Q. This is your first time having your deposition taken?

A. Yes, it is.

Q. With respect to this subject of biological testing -- or have you done biological testing?

A. Yes, I have.

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

Q. And you're responsible for that at the present time, I guess?

A. And that's true.

Q. Have you been in that field ever since you came from or came to R. J. R.?

A. In fact, since about 1978 at Battelle and certainly since I came to R. J. Reynolds in '85 I had that responsibility.

Q. So at Battelle, you were doing biological testing of cigarette products?

A. Oh, no, I'm sorry. If you said -- I didn't mean to imply cigarette products, just biological testing.

Q. Well, let me just ask you some very general questions about that. Since you came to R. J. R. -- which I think you said was in '85, correct?

A. That's correct.

Q. Since that time, have you ever – are you aware of any whole product testing of R. J. R. brand cigarettes?

A. Yes, we've done whole product testing in the biological area, chemistry areas as well, since I came to the company.

Q. Which brands have you tested?

A. Numerous brands. I certainly know that

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf www.industrydocuments.ucsf.edu/docs/lghl0001

we've tested our leading brands, but I would say every brand.

Q. All brands at R. J. R.?

A. Correct.

Q. Are you aware of whether there was any whole brand or whole product testing of Winston before 1966?

A. The very narrow time frame there, I know that in the '60s we certainly did whole brand testing of Winston, both in biological and chemical tests during that decade.

Q. You just can't say for sure whether it was before 1966?

A. My recollections are a little bit more vague than that, but I would say right in that time frame we had initiated whole cigarette, commercial cigarette testing.

Q. Now, let's be sure you and I are both talking about the same thing. What do you consider to be whole product testing?

A. For me, that was when you smoke a commercially available cigarette or a cigarette that's to be introduced into the market as a commercial cigarette.

Q. And how do you test it for biological

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf www.industrydocuments.ucsf.edu/docs/lghl0001

activity in whole product testing context?

A. Well, we have very many tests that we apply to cigarettes, of course, so we have chemistry tests that we do. We have biological tests, tests that include petri dish and test tube kinds of studies, what we often refer to as in vitro biological assessments. When conditions merit, we also use more complex models like animal inhalation studies or dermal tumor promotion studies, and beyond that, we sometimes use as appropriate, again, based on our tier testing approach, testing in smokers or in human clinical studies.

Q. Let's start from the back and work back towards the first. Clinical studies, describe the nature of your clinical studies.

A. Clinical studies can include human smoking behavior studies, human urine mutagenicity studies, for example, studies that measure the constituents that might be circulating in the bloodstream after individuals have smoked cigarettes. Investigations into the biochemistry of the lung fluids, for example, in smokers. Investigations into the pathology that might be observable to a clinician during the time in which individuals have chosen to smoke a test cigarette or a commercial cigarette, in fact, so I

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

think that may not limit or conclude all of the studies that we do, but I think that's representative of the kinds of studies we do in the clinic.

Q. Would you have given the same answer if I had restricted the -- or limited the question to biological testing for lung cancer?

A. I certainly believe that many of the things that I had mentioned are relative to lung cancer, and I imagine I would have given the same answer. I'd have to go through them again for you. Again, the -- I think I started with human smoking behaviors, and of course, those would have some relevance to exposure and, therefore, lung cancer, I think. Reasonably, the human urine mutagenicity studies that I mentioned to you, mutagenicity from our perspective, at least, is one portion of the complex multi-stage model of carcinogenesis as it would be considered from my perspective to be very important. Those measures of the biochemistry of the lung that I mentioned would also be germane to lung cancer and investigations by clinicians into the pathology of the lung during life. That means that they would go in and look with the bronchoscope, for example, would also be germane, so I think as much as I mentioned, and I'm sure there may be more, but of those, I think that would be the same

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf www.industrydocuments.ucsf.edu/docs/lghl0001

response.

Q. You've used the word mutagenicity --

A. Uh-huh.

Q. – a couple of times. Would you explain what you mean by that?

A. Well, mutagenicity is -- it is the capacity of the chemical generally to influence or damage DNA. I think that will be a good definition, and so a measure of mutagenicity is a measure of the ability of some compound or complex mixture to damage DNA.

Q. Let me ask this: As of today, what is your opinion as to whether or not over the entire period from, let's say, from 1950 through today as to whether or not R. J. R. brand cigarettes cause lung cancer?

A. I'm not sure I follow it exactly. Could you repeat that for me?

Q. Sure. I'll try to improve it.

A. I'm sure it was fine. I just didn't follow.

Q. What is your opinion as of today as to whether or not R. J. R. brands of cigarettes all have caused lung cancer from 1950 forward in some people?

MR. LATHAM: I'm going to object to the form because it's over-broad. Subject to that

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf Source: https://www.industrydocuments.ucsf.edu/docs/lghl0001

objection, you can answer the question.

THE DEPONENT: Well, I believe that cigarette smoking carries with it significant and inherent risks for many serious diseases. I also believe that they may contribute to causing those diseases in some individuals. I think that would be representative of my view of that.

BY MR. BROWN:

Q. Now, when you say diseases, do you include lung cancer?

A. I do.

Q. And how would you characterize the risk of lung cancer from the smoking of an R. J. R. brand cigarette?

A. Again, I'm a little lost – I mean, I believe it to be a risk factor, and our products are also cigarettes that have risks associated with them, and again, they may contribute to causing those diseases, particularly lung cancer in this case, in some individuals.

Q. Do you have an opinion as to what percentage of regular smokers will die from some cigarette related disease, some smoking related disease?

MR. LATHAM: Object to the form of the

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

question. It's over-broad. You can answer.

THE DEPONENT: Well, I don't know that I'd carry an opinion regarding all diseases and cigarette smoke. I do have an opinion, and about one person in ten who chooses to smoke for their lifetimes will contract lung cancer.

BY MR. BROWN:

Q. But you don't have an opinion as to what the percentage of death will be in regular smokers from all cigarette related diseases, including lung cancer?

A. No, I don't have a good sense of that.

Q. Do you agree with the statement that in men 90 percent of lung cancers are caused by cigarette smoking?

A. Again, I don't differentiate it by gender in my own mind. Again, I do carry a number that stays with me that of those people who have lung cancer, generally the number I carry with me is about 85 percent of those people have lung cancer are smokers.

Q. And does that mean that in your view 85 percent of lung cancers are caused or at least contributed to the cause by smoking?

A. I think it's reasonable that as we look at the population of smokers that cigarette smoking is a

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf www.industrydocuments.ucsf.edu/docs/lghl0001

risk factor for that -- for people who chose to smoke and that that elevation that we see in the population associated with that risk factor is associated with smoking.

Q. Let me see if I can try to make the question more clear and maybe I can get at what I was trying to obtain. I'd appreciate on this next one, no matter how long you want to explain it, if you'd start your answer with a yes or no and then explain or tell me you can't. I mean, you know, you can still tell me why. Is it your opinion that 85 percent of lung cancers are caused by or contributed to the cause by cigarette smoking?

MR. LATHAM: Object to the form of the question. It's compound, over-broad. Subject to that, you can answer the question.

THE DEPONENT: I hate to do this to you, but I would like you to repeat it one more time. I do want to do a good job on responding.

BY MR. BROWN:

Q. Let me ask you to understand my meaning of the word cause in this next question to be either the sole cause or a contributing cause, either one, okay, but I'll just say cause.

A. Uh-huh.

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf www.industrydocuments.ucsf.edu/docs/lghl0001

Q. Is it your opinion that 85 percent of lung cancers in America are caused by cigarette smoking?

A. As best I can answer, my opinion is that cigarette smoking contributes to the risk of lung cancer, and it does so in a manner where it may contribute to causing those diseases.

Q. Well, you consider smoking a significant cause of smoking lung cancer, would you not?

A. Well, I've stated I believe that it to be a significant inherent risk, and I also said to you that it may contribute to causing that disease in some people.

Q. So would that make it a significant cause of lung cancer in your view?

A. I think I'm differentiating here. I believe it to be a risk factor, and it may contribute to causing that disease in some people.

Q. Well, is smoking a cigarette resulting -- if smoking cigarettes on a regular basis resulting in lung cancer in '85 percent of those who have lung cancer --

MR. LATHAM: I'm going to object to the form of the question. You've asked this about six times, and he's answered it every time. Subject to that objection, he can answer. He can

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

answer.

MR. BROWN: I can only agree that he's answered if you give an answer.

BY MR. BROWN:

Q. I'm not sure -- Doctor, you're answering -- you're going right at my question.

A. Uh-huh.

Q. And I don't mean to make that a --

A. And I mean to do that --

MR. LATHAM: The objection stands as asked and answered. Subject to the objection, you can answer it again.

BY MR. BROWN:

Q. So I'll try to restate it. You draw some distinction between risk factor and cause?

A. I do.

Q. Well, first of all, is it -- you've said it's a significant risk factor, I think.

A. Yes, I believe it is a significant inherent risk factor for lung cancer, smoking is.

Q. Is asbestos a cause of lung cancer?

A. Again, I would argue that it – and I'm not an expert in asbestos cancer, but I would argue that asbestos is also a significant risk factor for lung cancer.

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

Q. In your opinion, which is a greater risk factor, asbestos or smoking cigarettes?

A. I don't think I have an opinion there that can quantitatively weigh the differences. I know that they both may contribute to causing those diseases in some people.

Q. Are you aware that epidemiological studies – many, many epidemiological studies -- put a relative risk of over 20 for regular cigarette smokers but only about 4 or 5 for asbestos workers?

A. Well, again --

MR. LATHAM: Object to the form of the question, lacks foundation. Subject to that, you can answer.

THE DEPONENT: No, I'm not aware of the differences between the risk. I don't really know the risk factors associated with asbestos and lung cancer. I've heard other numbers, and the Surgeon General has supported a risk factor of about 14 for lung cancer in cigarette smoking.

MR. MCGEE: Can I say something? And I probably should have done so earlier. Bob, can we get a stipulation that the objections that are raised by R. J. R. are applicable for us as well without us having to join the objections each time?

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

MR. BROWN: Okay.

(EXH. 1 was marked for identification.)

BY MR. BROWN:

Q. Let me draw you a little graph that will be somewhat crude, and we're going to call this Exhibit 1. Put the stamp over my writing. This is a graph which has been used in various trials, including the -- with certainty, the Whitley versus Philip Morris R. J. R. trial. It's not a graph. I guess it's a bar chart, and the column on the left indicates the lung cancers caused by smoking, and the column in the middle are the lung cancers caused by asbestos, and the columns on the far right represent all other causes of lung cancer. Now, you see I haven't put down any particular numbers as to how far the graphs are. I'm just showing the relative between all asbestos and lung cancer.

A. Again, you -- I'm sorry.

MR. LATHAM: Let him ask the question before you answer it.

THE DEPONENT: I'm sorry.

BY MR. BROWN:

Q. And my question, after going through all that artistic endeavor, is merely to tell you that, in general, would you agree with that assessment of the

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf Source: http://www.industrydocuments.ucsf.edu/docs/lghl0001

distribution of cause of lung cancer?

MR. LATHAM: Object to the form. The chart lacks foundation. Subject to that, if you can understand what this chart is, then explain it, then. You can answer the question.

THE DEPONENT: Well, again, I understand that you labeled this Y axis here as causes of lung cancer, and again, I differentiate for you my position, which is that cigarette smoking is a risk factor and may contribute to causing lung cancer in some individuals. I don't know generally how one can relate a graph, and I simply don't know the foundation for this information so as this axis represents lung cancers caused by a specific material, so again, I cannot tell you that, one, whether these data are accurate, but I will be happy to support that, but I frankly don't understand the term cause as it's used here. If it were risk factor, generally I would appreciate that what you're telling me is that the risk factors associated with cigarette smoking as found in many epidemiology studies are apparently higher than those risk factors that have been determined for asbestos are all other causes.

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

BY MR. BROWN:

Q. Now, you're making a distinction between risk factor and cause, and I'm not understanding what that distinction is. Could you explain that to us?

A. Well, a risk factor for me suggests that something may contribute to causing a disease and is generally a mathematical model of the population that says there is increased risk in that population associated with this practice. This practice might be being exposed to asbestos or, in this case, cigarette smoking.

Q. Okay.

A. From my perspective, then, may contribute to causing, means that there are many factors that may result in an individual acquiring or having lung cancer. It is not for me, at least, the same as saying that because an individual smoked and an individual had lung cancer that there is any evidence to suggest that individual got that lung cancer as a result of the practice of smoking. Risk factors -- and I don't know whether this is cause or risk factor really -- risk factors are determined based on population. I can't tell you that those individual's cancers were caused by smoking.

Q. So if I were to tell you that that chart

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf Source: https://www.industrydocuments.ucsf.edu/docs/lghl0001

was based upon risk factors, would it generally demonstrate the degree of risk factor of those three elements: tobacco, asbestos, and all other?

A. I think it's reasonable.

Q. Okay.

A. That if we discuss risk factor here as it applies to an entire population of individuals who may have been exposed to asbestos, tobacco, or other causes.

Q. Are you testifying that, hypothetically, if you look at an epidemiological study and it says that a certain identified population associated with a certain risk have a high relative risk of contacting or contracting that disease that that does not mean, in your view, that any particular individual within that population who gets that disease got it as a result of that risk?

A. I believe, in general, risk factors simply implied of the population that there's an increased risk in individuals who have that practice. It certainly doesn't carry with me a concept that as a result of a single practice an individual contracted a single disease. I'm not sure that that's exactly what you asked me, so it might be appropriate --

Q. Close enough.

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

A. I think that's my response is, again, my position is that a risk factor suggests to me and to others that it -- a practice like smoking --

Q. Right.

A. – may contribute to causing that disease in the population but not in -- not for me to know in an individual.

Q. Is it your testimony that smoking cigarettes for a sufficient period of time and sufficient quantity contributes to the risk of developing lung cancer?

A. It certainly may contribute to the risk of developing cancer, yes, lung cancer.

Q. Are you going to testify in this case to anything specific to Larry Lucier, the plaintiff who has the lung cancer?

MR. LATHAM: Object to the form of the question, lacks foundation. Subject to that, you can answer the question.

THE DEPONENT: Not particularly about Mr. Lucier, no.

BY MR. BROWN:

Q. You're not going to offer any opinion that smoking caused or didn't cause his lung cancer?

A. No, I don't imagine I will offer an opinion

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf Source: https://www.industrydocuments.ucsf.edu/docs/lghl0001

in that area.

Q. Will you offer an opinion that he was --

that he --

MR. LATHAM: I can short circuit it. He's not going to have any opinions that are specific to Mr. Lucier's disease process or causation of that disease process.

MR. BROWN: Fair enough, and I know I can trust you.

BY MR. BROWN:

Q. Well, let me go back to my original question, which was a few days ago.

A. Yeah, sure.

Q. With respect to R. J. R. commercial cigarettes --

A. Uh-huh.

Q. -- commencing in 1950 and coming right down to the present time --

A. Uh-huh.

Q. -- and we'll exclude for this question the specialty cigarettes like Eclipse and Premier and anything else that I'm overlooking, but at least we'll exclude those.

A. Premier and Eclipse, yeah.

Q. Even though I guess they were sold --

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

A. Uh-huh.

Q. -- we'll exclude them from commercial. By commercial --

MR. LATHAM: Let him ask the question.

THE DEPONENT: Sorry.

BY MR. BROWN:

Q. By commercial, I'm talking about brands that are sold over-the-counter or in some other way directly to the public. Is it your opinion that with respect to all of those brands from 1950 to the present time that all of those brands are a significant risk factor for lung cancer?

MR. LATHAM: Object to the form. The question's over-broad. Subject to that objection, you can answer the question.

THE DEPONENT: I believe that all cigarettes are risky, that smoking them -- and I don't differentiate amongst all cigarettes. They all may contribute to causing lung cancer.

BY MR. BROWN:

Q. That would include the Philip -- I mean, the R. J. R. brands?

A. Yes, that would include R. J. Reynolds brand.

Q. Now, in your -- well, first, of a more

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

basic question, what's product stewardship mean?

A. Product stewardship is a scientific approach that we use that assures our consumers that as we make changes to our products -- either intentionally or we guard against unintentional changes -- that as we make changes to our products we do not increase the risk that smokers may have from choosing to smoke our products. It basically assures that we make all of our cigarettes as safe as we can make them. It is a program that relies upon an understanding of the biology, the chemistry, the literature and work that had been done before, and even human studies, to gather an adequate degree of information for us to intelligently decide whether or not as experts in toxicology a change has the potential to increase risk for our consumers. Should that be detected by our product stewardship approach, we would not make such a change in our products and introduce them into the marketplace.

Q. Would it be accurate to say that either in preparation for this case or because – and/or, I should say -- because of the necessity to do so because of your various jobs over time with R. J. R. that you have made it your purpose to examine and review R. J. R.'s scientific materials related to your

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

field, go all the way back to 1950?

A. I think that would be correct. As I mentioned, I acquired my new position last March, and as part of having responsibility for product stewardship and scientific and regulatory fares, for example, I have had that opportunity, so I would agree with your question.

Q. From your review of the R. J. R. internal documents, what year would you say the top management of R. J. R. was aware that smoking was a significant risk of lung cancer?

A. Again, I'm not an expert in the entire history of the company and didn't know the C. E. O. of the company back then, but I do recall in reviewing some documents that there were documents -- and this may not be the earliest document certainly, but I think in about 1953 there were summary documents prepared, perhaps by Claude Teague, that spoke of the risks of cigarette smoking, and I do know that even in the public documents like Reader's Digest there were concerns about cigarette smoke and disease as early as, perhaps, 1950, so again, I'm not an expert in the history of that, but that's my general sense.

Q. How would you characterize the Teague memo or memorandums in terms of informing the top

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

management? I mean by that very specifically, in your opinion, did that alert the top management of R. J. R. that they had a cigarette -- that they were selling a product which had a significant risk of lung cancer?

MR. LATHAM: Object to the form of the question. It's vague as to which Teague memorandums you're talking about. Subject to that, you can answer the question.

BY MR. BROWN:

Q. And I mean, any memorandum in which he spoke about the biological activity or the lung cancer potential for R. J. R. cigarettes.

MR. LATHAM: Still, the question's over-broad. Subject to the – and multiple documents referring to the --

THE DEPONENT: Again, and I can't tell you whether I've seen even a great number of Mr. Teague's documents, nor can I tell you whether or not upper management, to my recollection, reviewed them or understood them at that time so --

MR. BROWN: Sure.

THE DEPONENT: – I'm assuming that if people did read those documents they'd have some awareness that cigarette smoking carried risks.

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf Source: http://www.industrydocuments.ucsf.edu/docs/lghl0001

BY MR. BROWN:

Q. When were the first Teague memorandums or reports on the significant risk of smoking to lung cancer?

MR. LATHAM: Object to the form of the question. Subject to that, you can answer.

THE DEPONENT: Again -- sorry. I feel that I'm pretty far away from my field of expertise in the complete review of those documents to be able to give you an answer as to when the first might have occurred. My recollection was just that, that Mr. Teague had conveyed some concerns about looking at other literature and saying there were some concerns.

BY MR. BROWN:

Q. At least some of those before 1954, correct?

A. The timing in my mind is approximately 1953, but for me in reviewing all those documents and not being in my field of expertise directly, I have a tough time recalling.

Q. Did R. J. R. conduct whole product testing of Winstons between January 1st, 1954, and the end of the year 1966?

A. '54 and '66? I – the specificity of your

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

question makes it difficult for me, but I believe that they did do some testing of the biological activities of Winston during that time frame.

Q. And did they generally support the idea that Winston was a significant risk for lung cancer?

A. I think in the kinds of assays that were done, although the assays may have had some applicability to understanding the risk of lung cancer, I don't think the studies conducted would deny the fact that there was some potential for risk associated with cigarette smoke.

Q. And are you saying you just can't recall or for some reason you can't say whether these tests also indicated a significant risk?

A. Well, no test, no single test in biology or chemistry, has really the potential to elucidate a risk for lung cancer. I think even today we rely upon a very broad range of testing to begin to understand the relative risks of lung cancer in smokers, so the single tests are those tests that were conducted in 1960s, although, perhaps, germane, could, I don't think today, even tell us whether or not that would imply that there would be a significant risk for lung cancer.

Q. Let's move away from single tests --

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

A. Uh-huh.

Q. -- and ask you the same question but, say, with the array, the combination of all of the biological activity testing, would that be a fair way to describe them --

A. I think that's --

Q. – on a whole product basis, have strongly indicated that Winston was a significant risk factor for lung cancer.

A. I think as you asked the question -- and there was an array of biological tests conducted by R. J. Reynolds and conducted on Winston in '60s. That's my recollection. Whether the scientists then or scientists now -- that would be interpreted to characterize what you – you use that as a strong risk for lung cancer. I don't think that those assays conducted at that time would be able to give enough insight to determine the relative risk factors associated with cancer but would certainly imply that there were biological activities associated with cigarette smoke and the Winston cigarette under study.

Q. Let me dig down to some basics here so that I can understand what you're saying regarding these tests. Did these tests include carcinogenicity? I have a lot of trouble saying that.

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf www.industrydocuments.ucsf.edu/docs/lghl0001

A. Well, again, carcinogenicity, as I feel you're aware, is a very complex series of mechanisms that occur in the body that may not be fully understood by everyone today, but the studies that were conducted in the '60s, those of which I am familiar, included a ciliostasis assay and an assay that involved determining the relative inflammation potential of cigarette smoke condensates at the time, as well as whole smokes, and those studies have ramifications to how the disease process might move forward. Ciliostasis would tell us something about the relative capacity of -- these were animal models or in vitro models – tell us the rate at which compounds might be cleared from the respiratory tract of those models, and of course, with some assumptions might have some implications to how the lungs of smokers might be cleared, so allowing an increased amount of material in the lung might suggest an increase and potential for risk. In the case of the inflammation assays, again done at Reynolds during the '60s, increased inflammation remains today at least one mechanism that people might assume has some association with increased lung cancer risk, so as those models, understanding specifically what they measure and how they might apply to lung cancer, they

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

have some degree of applicability to lung cancer, but because lung cancer is the complex process that it is, they might not have been adequate to inform people of the full risks.

Q. Would you consider them some evidence of the association between cigarette smoking and lung cancer?

A. I think, fundamentally, they have, as I've explained to you, some influence in recognizing differences in mechanisms that might protect people from the risks associated with exposure to whatever chemical's under test, and I think that's the best answer I can give you.

Q. In your opinion, has there been at any time or at any point in time has there been in existence scientific proof that smoking is a significant risk factor for lung cancer?

A. I don't recall the adjectives you used on proof. From that, I do believe that the epidemiology suggests to us that cigarette smoking is a significant and an inherent risk factor for lung cancer in our population today. Are you asking beyond that, perhaps?

Q. Well, I'm asking whether or not -- let's take epidemiology. Did there come a point in time

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

when epidemiology studies, as far as you're concerned, constituted proof that -- scientific proof -- that smoking cigarettes, first I'll say, was the cause of lung cancer?

MR. LATHAM: I'm going to object to the form of the question, the word scientific --

BY MR. BROWN:

Q. Of course, I said a cause, suggesting there might be other causes at the same time.

MR. LATHAM: Still going to object to the form of the question.

BY MR. BROWN:

Q. Go ahead.

MR. LATHAM: You can answer the question.

THE DEPONENT: For me -- and I'm not an epidemiologist – those studies in epidemiology – and again, which there were many – suggest a risk factor, a significant risk factor, associated with smoking and lung cancer. But again, a risk factor is not for me the same thing as an independent cause of the disease. I believe that cancer to be a multifactorial disease and that risk can be generated from a number of different exposures to different chemicals or different experiences or a

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

difference in the smoker themselves, so I think the epidemiology provides for me the understanding that cigarette smoking is a risk factor. It contributes to the risk that people experience relative to lung cancer and smoking.

BY MR. BROWN:

Q. In your opinion, has epidemiology provided proof, scientific proof, that smoking cigarettes is a significant risk factor for lung cancer?

A. Yes.

Q. When do you think that point in time arrived when epidemiology provided that proof?

A. I think that's -- again, I'm not an epidemiologist, and for many years, I didn't follow all that literature and still don't follow all of it today, but I think that as the – and scientific proof. I believe that cigarette smoking is a risk factor for lung cancer. I believe that that learning came about as a result of different epidemiology studies across time. I believe that as the Surgeon General said in 1964, Surgeon General suggested that there was a risk factor associated with smoking and lung cancer, so I think those studies were forthcoming until the '50s and '60s and represent for me an understanding that cigarette smoking is a risk factor

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

for lung cancer.

Q. In your opinion, then, would the scientific proof of smoking being a significant risk for lung cancer have existed by 1960?

A. Again, I don't know. I'm not enough familiar with the literature, and I think every scientist might interpret those data developing during that time differently, so I can't say when everyone might have construed that cigarette smoking was a risk factor for lung cancer, but I think as -- if I were to look for one document in that time frame, and I would refer to the Surgeon General's remarks in 1964.

Q. Well, let me ask you the same with respect to the information referred to in the 1964 Surgeon General's Report on Smoking and Health. And I'm not asking for you to tell me that everybody thought so or that there was one document that constituted the scientific proof, but by 1964, with the publication of the Surgeon General's Report, do you think the scientific proof that lung cancer was -- that smoking was a significant risk factor for lung cancer existed?

MR. LATHAM: Object to the form of the question. It's been asked and answered. Subject to that, you can answer the question.

THE DEPONENT: Again, I think that I can't

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

speak for all scientists or for the whole population as to whether they follow --

BY MR. BROWN:

Q. I'm just asking you.

A. For me, I've always had an awareness that cigarette smoking was a risky circumstance. I knew as a child that cigarette smoking carried with it risks, mostly because my dad told me so but during that time, between 1950 and 1964 that you've talked about or the Surgeon General's data. For me, I'm not certain that that would have convinced me at that time, but I've seen increasing evidence in epidemiology studies. I've seen increasing sophistication in epidemiology studies over a long period of time, and I now certainly accept that cigarette smoking is a significant risk factor for lung cancer.

Q. For you, when do you think the scientific proof existed to demonstrate that smoking was a significant risk factor for lung cancer?

MR. LATHAM: Object to the form of the question. It's been asked and answered. Subject to that, you can answer.

THE DEPONENT: Again, I feel like you're asking me for a date, and I don't have a specific date in mind, but I understand --

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf www.industrydocuments.ucsf.edu/docs/lghl0001

BY MR. BROWN:

Q. It doesn't have to be a date. It could be a day, a decade. It could be from date to date --

MR. LATHAM: Bob, let him finish.

BY MR. BROWN:

Q. -- you know, whenever, we can --

MR. LATHAM: Need to let Dr. Mosberg finish his answers. I think he was in the process of answering --

MR. BROWN: I'm trying to help. I was trying to be helpful.

MR. LATHAM: But you can help him after he finishes his answer --

MR. BROWN: Really meant I was trying to be helpful --

MR. LATHAM: I understood, but you can let him finish, and then you can try to help. If you remember the question, you can answer it now.

THE DEPONENT: Well, it may be best if you restate it one more time probably.

BY MR. BROWN:

Q. Approximately when did you consider that there was scientific proof that smoking cigarettes was a significant risk factor for lung cancer?

A. Well, as nebulous as this answer seems, it

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf Source: http://www.industrydocuments.ucsf.edu/docs/lghl0001

was probably at least by the '70s that I understood enough about the epidemiology that I was seeing and still not being an expert but as -- in epidemiology but as a scientist reading that I felt that there was adequate information for me personally but as a scientist to feel that there was a significant risk for lung cancer associated with cigarette smoking.

Q. In your opinion, by approximately what date would reasonably competent scientists have concluded that more likely than not cigarette smoking was a significant risk factor for lung cancer?

MR. LATHAM: Object to the form of the question. It's vague, lacks foundation. Subject to that, you can answer the question.

THE DEPONENT: In this instance, I think you're asking me to speak about a very broad range of individuals who have different scientific trainings. I don't think I can really offer you a good answer to say when specifically people depended upon their training, depended upon their experience. I'm sure they may have found either more or less a difference of opinion regarding what they might have construed from those epidemiology studies.

BY MR. BROWN:

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

Q. At what approximate time -- I'm not asking for a day of the week or a date or even a year – but at what approximate point in time would you feel comfortable in telling us that by X time reasonably capable scientists would have concluded that it was more likely than not that cigarette smoking was a significant risk factor for lung cancer?

MR. LATHAM: Object to the form of the question. It's almost identical to the last question you asked, and he's answered it already. Subject to that objection, you can answer.

THE DEPONENT: Again, my view is that I can't give you even a decade based on my lack of knowledge of who represents reasonably competent scientists, in what areas of expertise, and the degree that they had spent time understanding that literature. I just don't feel that I'm qualified to answer for other people.

BY MR. BROWN:

Q. Fair enough. Let me switch slightly to a different area, slightly. I said slightly. By 1966 -- which you will note is after the Surgeon General's first report on smoking and health.

A. Uh-huh.

Q. Did you in your review of R. J. R. internal

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf www.industrydocuments.ucsf.edu/docs/lghl0001

documents determine that the R. J. R. scientists believed that there was scientific proof that cigarette smoking was a significant factor for lung cancer?

MR. LATHAM: Object to the form of the question. It's vague and lacks foundation. You can answer.

THE DEPONENT: My review of the scientific documents of R. J. Reynolds was not directed to understanding, nor was my reading so broad as to discover whether or not there was a consensus amongst scientists at Reynolds as to whether or not they believed there was scientific proof that cigarette smoking may contribute to causing diseases or to be a risk factor. My more focused reading was in the areas of the kinds of biological assays that were conducted, the developing understanding of the chemistry of cigarette smoke to try and understand the developing focus of biological testing at the time, so I don't think I read broadly enough of documents, although I have seen some that clearly suggested that people saw that there were external communications, that they were discovering compounds of cigarette smoke that

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf www.industrydocuments.ucsf.edu/docs/lghl0001

might have been concerning, so for me, I really can't give you a specific answer other to say that people were at our company having an awareness of the need for biological testing and that there was chemical testing going by with our products.

BY MR. BROWN:

Q. When you arrived as an employee of R. J. R., was there a consensus among the scientists that the R. J. R. brand cigarette, commercial cigarettes, were a significant risk factor for lung cancer?

A. Again, you ask me to speak about other people. I think as we spoke as scientists then -- and I could only characterize this about those people with whom I spoke -- that they felt by that time that there was a significant risk associated with smoking and lung cancer. I know that from the day I arrived we as scientists all acted upon the presumption that there was a relationship that cigarette smoking was a risk factor for lung cancer and that we had been diligently involved in identifying means by which to reduce the risks of our products for people who had chosen to smoke those types of products. In fact, when I joined the R. J. Reynolds Tobacco Company in late '85, there was a very substantial effort ongoing to develop a

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf Source: https://www.industrydocuments.ucsf.edu/docs/lghl0001

cigarette that reduced risk by heating tobacco rather than burning tobacco.

Q. That was the Premiere?

A. That was the Premiere studies that I began to work on basically the day I arrived, but I know that work had been going on before, and I know that their biological testing, having gone on for 35 years, was focused in understanding the biological activity of cigarette smoke, and for that entire time, there were ongoing efforts to reduce through both specific and general reduction methods the chemistry of those cigarettes and the yields of those cigarettes based on the presumption that it would reduce risk.

Q. When you said during all that time, you were talking about the 35 years?

A. I'd have to hear my answer.

MR. BROWN: Read back his answer so you'll know the context.

(The Court Reporter read the answer commencing on page 47, line 6, and concluding on line 13.)

THE DEPONENT: Now, having heard that, I'm sorry, I'll have to ask you to repeat your question.

BY MR. BROWN:

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf www.industrydocuments.ucsf.edu/docs/lghl0001

Q. The entire time of that answer, that refers to the 35 years?

MR. LATHAM: What's the question, Mr. Brown?

THE DEPONENT: I mean, it would be best if you repeated the question in its context. I'm not sure I'm following the --

MR. BROWN: Let me ask you to read the answer back to me again, so I can pull the key phrase. I'll put it into my question.

(The Court Reporter read the question commencing on page 47, line 5, and the following answer starting on line 6 and concluding on line 13.)

THE DEPONENT: Okay. I got it, the entire time, so I think I know --

BY MR. BROWN:

Q. Go ahead.

A. -- where I used that phrase, and your question is, do you mean that during the entire time there was ongoing activity to develop cigarettes that reduced risk?

Q. Uh-huh, yes.

A. Yes.

Q. And when was that time approximately

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf https://www.industrydocuments.ucsf.edu/docs/lghl0001

commencing, that time to reduce risk?

A. Well, I think that that time began – and I can't be specific here again. My recollections were that in 1954, for example, R. J. Reynolds Tobacco Company introduced the use of the filter and that in 1956 they began to use reconstituted tobacco and, throughout that time and at least from that time forward, using a number of other different mechanisms to reduce the yields of cigarettes. That program was moving forward, that program being identifying means by which to reduce the risk of cigarettes produced by R. J. Reynolds.

Q. Can you just generally list the other design changes that actually became involved or actually were used in commercial cigarettes --

A. Sure, I --

Q. -- in addition to filters --

A. I'm sorry.

Q. -- reconstituted tobacco, reducing yields, and what else, you think?

A. Well, I think that, although I'm not -- not an expert in product design, my recollections are such that about 1954 R. J. Reynolds introduced on the Winston cigarette filters. About a couple of years later -- again, this is my recollection -- is that

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

reconstituted tobacco was introduced into R. J. Reynolds' products.

Q. About '56?

A. 1956, then. I think after that time, I would say that porous – increasingly great porosity of papers was used again as a mechanism to reduce yield, and I think that was about 1960. Beyond that, I think in 1968, for example, the use of expanded tobacco became evident in commercial products, and I think by 1970, '72 -- and again, I'm not exactly precise on these numbers – the use of increased filter ventilation or air dilution was introduced. All of those techniques from my understanding -- and again, now, as a product designer or developer -- were relevant in reducing the yields of cigarettes, and that concept, the general reduction concept, the reductions of yields of the cigarettes and tar, those were thought based on premises the concept of less ought to be better. As a toxicologist, I believed then, and I relied upon that concept in my own toxicology studies that reducing the amount of material to which individuals might be exposed would have benefit, and we've seen the same thing in our laboratory studies where there's clear dose dependent reductions in the biological activity associated with

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

exposure to cigarette smoke and cigarette smoke condensates. We've seen that in in vitro studies and in animal studies. We also see that those yields, of course, are characterized by chemistry, and the chemistry, of course, has gone down as these techniques were introduced.

Q. When you said saw in your laboratories, you're talking about evidence of the lung cancer risk being dose dependent?

A. In our laboratories, using a broad range of studies and gaining a weight of evidence, understanding, we have seen a dose dependent response in those studies, many of which are, of course, directed towards understanding the relative lung cancer risk that as exposure to cigarette smoke and cigarette smoke condensates is reduced then those -- the responses that are measured in those studies are reduced, and together as the weight of evidence in this very carefully selected battery of assays suggests to us that lung cancer risk would also be diminished.

Q. By these tests, you're referring to that they include smoke inhalation into animals?

A. Yes, they do include that.

Q. What were the animals, using what type of

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

animals, what kind of animals?

A. Over the years, rabbits have been used, mice, rats, hamsters. I think that's probably the range, I would say. There are probably others. I can't say that we can limit it to that, but most recently and most frequently, we now use rats, and the supporting work done by contract research organizations, that organization has used hamsters, and in those studies of both tobacco burning cigarettes and our Eclipse cigarettes, we've seen reductions in the biological activity directly associated with reductions in the amount of cigarette smoke to which those animals were exposed.

Q. Do those tests indicate any measurable reduction in risk to humans of smoking R. J. R. brand cigarettes for lung cancer?

A. That's a rather complex question for me. It's -- you've narrowed it -- I mean, I'm not sure that I followed all the narrowing that occurred in that question. Could you pose it to me again?

Q. Sure. You referred to some tests, some animal tests --

A. Uh-huh.

Q. – some behavioral tests, and those tests or any other tests that you conducted, including these

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf www.industrydocuments.ucsf.edu/docs/lghl0001

in vitro tests on these animals that you just mentioned, have any of those tests provided you with the basis for an opinion that the reduction in yield of commercial brand cigarettes by R. J. R. has measurably reduced the risk factor of lung cancer in humans?

MR. LATHAM: Let me object to the form of the question. It's confusing. Subject to that, if you understand what he's trying to get at, you can answer the question.

THE DEPONENT: Well, I think I understand that you're asking whether or not these tests allow us to have some ability to suggest a difference in lung cancer risk potential of different cigarette smokes. The battery of tests that we have selected, we believe, is a very appropriate battery of tests to give us the best possible insight into whether or not when cigarette smoke may have a different potential for cancer risk in smokers as another cigarette smoke, and as the weight of the evidence and taken together as a whole series of studies, we believe that they can suggest to us that there will be reductions in smoker's risks when the weight of the evidence is clear from this large

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

battery of assays. I'd like to clarify that that was not -- I mean, I was also speaking about the evidence in our laboratories of general reductions when we began that question.

BY MR. BROWN:

Q. Right. I think I had that in mind. Well, all right. Let me see if I can accurately summarize what you've said the way I understood it, at least. Correct me if I'm wrong. You're saying that from the battery of test results that you're aware of at R. J. R. you have concluded that there has been a reduction in risk from lung cancer for humans; however, you could not quantify it.

MR. LATHAM: Object to the form of the question. I believe it misstates his testimony, but he can answer the question if he understands it.

THE DEPONENT: And I would appreciate you just asking me the question again, and I'll try my best to answer it.

BY MR. BROWN:

Q. It's my understanding you're testifying that a battery of tests have been conducted at R. J. R. with which you're familiar gives you a basis for saying that in your opinion there has been some

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

reduction of risk for lung cancer from smoking R. J. R. cigarettes, but it doesn't give you a basis for an opinion as to how much risk reduction has occurred.

A. I think if you're saying that as this battery of tests is employed by R. J. Reynolds does it have the capacity to measure a potential for a difference in risk in smokers who chose to smoke a cigarette with a different biological activity as identified in these assays. I would say, yes, we have had reasonable evidence to suggest that we can identify cigarettes with reduced potential for risk of lung cancer. There are many factors, however, as I've indicated to you before that influence the risk that smokers experience. But this battery of tests, we believe, is the best series of tests that one could conduct to understand the relative risk potential of different cigarette smokes.

Q. As I understand your answer or your testimony and assuming for the purpose of my question there has been some risk reduction because of the design changes at R. J. R. which you've listed, while there's been some reduction in risk, you're not able to tell us what the -- how much risk reduction has occurred?

MR. LATHAM: I'm going to object to it as

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf Source: https://www.industrydocuments.ucsf.edu/docs/lghl0001

vague. You're referring to just based on the battery of biological tests or based on any of them?

MR. BROWN: Based on any of the tests.

MR. LATHAM: Any of the biological tests or any evidence?

MR. BROWN: Any tests.

MR. LATHAM: Any test.

MR. BROWN: Yeah, which were conducted on R. J. R. cigarettes.

MR. LATHAM: Subject to that clarification, you can answer.

BY MR. BROWN:

Q. Let me try to state it again. I'm just trying to get clarity on one point. I think I understand you in part to be saying in your opinion based upon these tests you referred to you believe there has been some reduction in the risk of lung cancer in certain R. J. R. cigarettes; is that correct?

A. I think that's reasonable. All cigarettes are risky, and all of them are risk factors for lung cancer, but the weight of the evidence that our laboratory would suggest would characterize as a difference in the potential risk for smokers would be

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

based upon the fact that as in all the assays that we use a reduction in the amount of material yielded from the cigarette would translate into those assays as reductions in biological activity, and that weight of the evidence that less ought to be better, less should reduce the risk, has, in general, been confirmed by that battery of assays. I think that's -- that's how I would summarize that.

Q. Second part of my question was, is it accurate to say that you do not have an opinion as to the degree of risk reduction which has occurred because of design changes at R. J. R.?

MR. LATHAM: Object to the form of the question as to vagueness as the word degree. Subject to that -- subject to that, you can answer the question --

BY MR. BROWN:

Q. How much? I know you referred --

A. I think I understand the question. Our assays are based on a comparative approach, asking the question in general whether or not one cigarette or the smoke from a cigarette has less potential to be a risk factor for cancer in smokers than another. I think it is true that we cannot quantitate the magnitude of that difference in the smoking

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

population, but we can see substantial differences in those models which suggest to us, again, some substantial change in risk for the smoking population should be anticipated.

Q. Would you agree that it is elementary in a dose response toxic substance that less exposure equals lower risk?

A. Again, elementary is -- I agree with you.

Q. You learned that the first week. You don't even have to get to 101. That's in 1(A), you know.

A. I agree that, in general -- of course, there can be exceptions to every rule.

Q. Sure.

A. But certainly, in general, less ought to be better. I agree with that. I think much of our general reduction approaches that were used in the '50s, '60s, all the way to today are based on that concept, and I think that those individuals who worked with us and those who had different visions of how tobacco smoke in society might be used, including the Surgeon General. And other experts outside of the tobacco industry strongly suggested that the tobacco industry pursue general reductions throughout that time. I support that.

Q. Well, let me see if you agree with some

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

hypothetical. Would you agree that someone who smokes one pack a day for a year has less risk than one who smokes one pack a year for five years?

A. I'm sorry. One pack a day for --

Q. One year, in other words a pack a year.

A. Okay. One pack a year.

Q. As opposed to a five pack year, one pack a day for five years.

MR. LATHAM: You're comparing just two hypothetical people?

MR. BROWN: Right.

MR. LATHAM: Okay.

THE DEPONENT: I think all -- again, all cigarettes have risks. If all things were equal, in other words, those two small groups were, perhaps, the same individual, they smoked in exactly the same way every day, and as a result, their exposures were substantially reduced as a result of the long time frame over which they smoked, I would argue that that would be reasonable to expect less risk. I can't tell you at what time the – any risk occurs, but in that assumption that you provided for us but that everything else being equal, I would say the individual who had smoked for a shorter duration

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

would experience less risk.

BY MR. BROWN:

Q. Now, with respect to your animal inhalation tests on these four different kinds of animals, did you compare biological activity in animals that had X amount of smoke inhalation against animals who had X plus amount of smoke inhalation?

A. Well, yes, we do. We do that in all of the studies that we design. The manner in which we do that is to have several different concentrations of smoke to which the animals are exposed, and of course, we look specifically within a cigarette design and across cigarette designs the relative biological activities that occur at -- in typical designs. Three concentrations of smoke are varying as across a range of a factor of ten in concentration. So we do as you suggested. We -- well, we do as you've asked, if we did, and we find that to be an intelligent study design.

Q. When you say concentration of smoke, are you talking about the quantity of smoke from a commercial brand cigarette?

A. I think specifically and in the minds of an inhalation toxicologist, there is some -- there is a clear relationship between the concentration of smoke

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

and the amount of smoke that the animal has inhaled. In our studies, we concern ourselves not only with the concentration of smoke that the animals are exposed to; that is, if smoke were in this room and we were the animals, there would be smoke in the room. The animals would be obliged to breathe that because they're breathing from that area. We go beyond that to measure the actual minute ventilation; that is, how much these animals inhale and exhale with every breath that they take throughout the course of the experiment, so by the end of the day, we can tell you in those exposures not only the concentration of smoke but also the amount of smoke that the animal's inhaled, and in those cases again, we provide to them three different amounts of concentration, and that translates in our studies to three different amounts of inhaled smoke.

Q. Tell us specifically what was the range of time that these animals would be placed in an area where they inhaled smoke. Are we talking about a day, a week, month?

A. These studies are --

Q. And what differences, I mean, what --

A. Well, there are – the time frame over which these studies are conducted is an important

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

variable in understanding the results that come about with these studies. Our studies are typically subchronic studies. That means that they are 90 days of time over which the animals are exposed to cigarette smoke.

Q. Is that 24 hours a day or some --

A. No, I'm sorry. More specifically, they're exposed for 1 hour a day, 5 days a week, for 13 weeks. We also have animals that recover then for another 13 weeks where they breathe fresh air but are held in their houses, and then we compare the biological activities of first animals who have only breathed fresh air, breathe fresh air for the entire duration. Those animals expose to three different concentrations of smoke of one type of cigarette, animals --

Q. You mean different animals?

A. Yeah, different animals, yeah, yeah.

Q. So three groups --

A. There are three groups of -- let's say there's cigarette A. Cigarette A, we provide three different concentrations of cigarette A smoke each to an independent group of animals.

Q. Right.

A. Then there's cigarette B, and as I mentioned, we do comparative toxicology studies, so

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf Supplied by www.industrydocuments.ucsf.edu/docs/lghl0001

we're comparing the results in a different three groups of animals exposed to the same three concentrations of smoke but emanating from cigarette B, so we have direct heads up comparisons of concentration one, two, and three between cigarettes A and B, also compared to these control animals that breathe only fresh air. Then a subset of each of those seven groups of animals that I've described are held for an additional 13 weeks to see whether or not those kinds of biological changes that we observed at the end of the first 13 weeks have continued to develop or have regressed or have been eliminated entirely, so that's – that's the study design.

Q. And is that what you just described a -- an accurate description of the -- at least the average of what you did in all these testings?

A. Of the inhalation studies, that would be very much how we've chosen to do that.

Q. And did all this smoke come from commercial brand cigarettes?

A. In some cases, they are from commercial cigarettes. We study many different aspects of our cigarettes and our cigarette additives, our cigarette processes. We qualify processes, for example, so if we were to expand tobacco, we would have a study that

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf https://www.industrydocuments.ucsf.edu/docs/lghl0001

would evaluate the influences of that expanded tobacco.

Q. But with respect to smoke from actual cigarettes sold, commercial cigarettes --

A. Uh-huh, yes, sir.

Q. – we've been calling them, did the commercial cigarette smoke inhalation studies have the same result or indicate as the others – let me start over. Did the commercial brand cigarette smoke used in your studies indicate that there was a dose response in the reaction to the smoke from the toxicology tests?

MR. LATHAM: Object to the form of the question as vague. If you understand what he's talking about, you can answer the question.

THE DEPONENT: I think I do.

BY MR. BROWN:

Q. Let me try to restate. Essentially, in all these tests, I take it, you found less biological activity for less concentrations or less time; is that correct?

A. That would be correct.

Q. And was that also the finding when you were using purely commercial brand cigarette smoke?

A. Yes, that would also be correct.

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

Q. Okay.

MR. LATHAM: Couple of minutes, and we'll take a bathroom break, Bob, if you're ready.

(A recess transpired.)

(The Court Reporter read the question commencing on page 64, line 23, and the answer concluding on line 25.)

BY MR. BROWN:

Q. Now, in your opinion, would a cigarette which had a tar yield of 0.0 be a safe cigarette?

A. I think for – I appreciate that today all cigarettes have inherent and significant risks. I can't tell you that tar is the only reason that there might be risks associated with cigarette smoking.

Q. Do you think secondhand smoke is a risk?

MR. LATHAM: I'm going to object. Were you finished answering the last question, Dr. Mosberg?

BY MR. BROWN:

Q. If you weren't, I apologize, and go ahead and finish.

THE DEPONENT: No, well, could you read back the question to me and my response and I'll --

MR. BROWN: Sure.

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf www.industrydocuments.ucsf.edu/docs/lghl0001

(The Court Reporter read the question commencing on page 65, line 9, and the answer concluding on line 14.)

THE DEPONENT: I think that's okay.

BY MR. BROWN:

Q. Well, maybe I'm not sure you answered. You may have, but do you have an opinion as to whether or not a 0.0 tar yield would be a safe cigarette?

A. Again, my --

Q. Again, I assume that, you know --

A. You could --

Q. No, your answer about all other cigarettes is not relevant to that question because there isn't any cigarette out there with a tar yield at 0.0 --

A. No, that's certainly true. My response is that I wouldn't be able to say that because, as I stated, there may be other reasons beyond just tar from which there might emanate risks.

Q. Would it be less risk than any cigarette now commercially sold?

A. It would be my -- again, without understanding this hypothetical cigarette in its entirety, without understanding its chemistry and its biological responses, I couldn't say that it could be a safe cigarette. It may be that there would be a

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf www.industrydocuments.ucsf.edu/docs/lghl0001

safe cigarette invented someday, but again, that's purely in the hypothetical. Reducing tar, in my opinion, does have the potential to reduce risks for smokers, but that is not to say that in an absence of tar there might not be other mechanisms by which risks would be associated with cigarette smoking.

Q. And what would they be?

A. One might – you asked me to speculate about a hypothetical cigarette, as again, I stated I'd have to have such a cigarette and we'd have to subject it to the same kinds of rigorous chemical testing and biological testing that we do today for cigarettes to ask questions about whether or not there would be risks associated with it.

Q. Well, I want you to assume that no tar is going through the filter and into the smoker's lung.

A. Uh-huh.

Q. None.

A. I --

Q. 0.0.

A. Given that the --

MR. LATHAM: What's the question?

BY MR. BROWN:

Q. And with that assumption, are you saying there would be other aspects of such a cigarette that

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf Source: https://www.industrydocuments.ucsf.edu/docs/lghl0001

might create a measurable risk for lung cancer?

MR. LATHAM: Object to the form of the question. It's been asked and answered. Subject to that objection, you can answer it.

THE DEPONENT: As I indicated – well, even with the cigarettes that are on the market today, there are multi-phases to the smoke. There is the particulate phase of the smoke and the gas phase of the smoke. Tar comprises the particulate phase minus water and nicotine. There are also other chemicals that come across in smoke in the gas phase. Even if tar were to be zero but if there would be other chemicals in the gas phases there are gas phase chemicals today, then that – those chemicals may very well convey risk to the smokers.

BY MR. BROWN:

Q. If the filter was blocked – assume that, blocked -- so that none of the smoke in the rod could get through the filter and into the smoker's lungs, would that be a safe cigarette?

MR. LATHAM: Object to the form of the question. It's improper, hypothetical. Subject to that objection, you can answer.

THE DEPONENT: Again, you're asking me to

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf Source: https://www.industrydocuments.ucsf.edu/docs/lghl0001

speculate about a nonexistent concept. If by what you described to me you mean that a person who would choose to smoke such a cigarette inhaled only the same air that individual inhaled when they were breathing, then that cigarette might not have any risks associated with it, but I know of no such cigarette, nor do I know of any reason why someone would choose to smoke such a cigarette.

BY MR. BROWN:

Q. Well, I don't want you to assume when you just assumed. I just want you to assume that no smoke got into the smoker's lung through the filter. Is that a safe cigarette?

MR. LATHAM: Object to the form of the question. It's been asked and answered.

BY MR. BROWN:

Q. The exception that you added to my question was that he was breathing the same air as he would be smoking if he didn't smoke at all.

A. Well --

MR. LATHAM: What's the question?

BY MR. BROWN:

Q. The question is, would that be a safe cigarette?

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf www.industrydocuments.ucsf.edu/docs/lghl0001

MR. LATHAM: Same objection, asked and answered. Subject to that, you can answer the question.

THE DEPONENT: Again, without being able to subject -- I don't know how this hypothetical cigarette is now working as you've described it. I simply can't imagine that the cigarette with a filter that's fully blocked -- I don't understand how it works. The only thing I can tell you is that should such a cigarette as you've imagined be in existence. I as a toxicologist would subject that cigarette through the same kinds of rigorous testing we do today, and we would ask questions regarding its relative risks to other cigarettes. I can't tell you, but I think that the definition of the cigarette is becoming unclear to me as we described in the hypothetical what might occur.

BY MR. BROWN:

Q. Would it be accurate to say that in a cigarette in which all smoke going through the rod and what would otherwise go through the filter is blocked, hundred percent blocked, that you don't have an opinion one way or the other whether that cigarette would be safe or not?

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf www.industrydocuments.ucsf.edu/docs/lghl0001

MR. LATHAM: Object to the form of the question. It's been asked and answered.

THE DEPONENT: I'm afraid that it's -- I can imagine many different mechanisms as would work in the hypothetical where risks can be associated with a hypothetical cigarette may not included the limitations that you've described on this hypothetical cigarette. So again, I cannot tell you in one way or another whether there would be risks associated with such a cigarette, but it would most certainly be appropriate to subject such a cigarette should we have one to, again, the rigorous kinds of testing that we would do for our own products.

BY MR. BROWN:

Q. In your opinion, does secondhand smoke coming from a cigarette that's being smoked by an individual add to the risk of that smoker's lung cancer; in other words, the smoke that doesn't go through the filter but which becomes secondhand smoke but is breathed in by the smoker?

A. I think -- I mean, and this is my opinion is that the amount of secondhand smoke that an individual might be exposed to is unlikely to contribute to the complete risk associated with

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

smoking – with smoking a cigarette.

Q. In other words, secondhand smoke from a cigarette being smoked does not add to the risk to that smoker?

A. That's my -- my opinion, and I would formulate that on -- on just a relative magnitude of exposure that might occur from the two mechanisms.

Q. In your opinion, is secondhand smoke ever a significant risk factor for lung cancer for anyone?

A. It's -- there are a number of different opinions of that. My opinion is that it is unlikely that secondhand smoke contributes to the risk even in nonsmokers.

Q. Would you change your opinion based upon the concentration of the smoke and the time in which the smoke exists as the individual is breathing it in?

MR. LATHAM: Object to the form of the question as vague.

BY MR. BROWN:

Q. And well, for example, a cocktail waitress at work for seven hours in a small cocktail lounge with cigarette smoke that has been in the atmosphere for the entire seven hours, would that person be at significant risk for lung cancer?

MR. LATHAM: Object to the form of the

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

question, lacks foundation. It's improper hypothetical. Subject to that, you can answer the question.

THE DEPONENT: I really don't have an opinion because I don't understand the concentrations of smoke to which an individual might be exposed or the relative ramifications of duration or an adequate understanding of the biological activity of those side stream smokes.

BY MR. BROWN:

Q. Is there any concentration and duration of secondhand smoke which in your opinion would create a significant risk factor for lung cancer?

MR. LATHAM: Object to the form of the question.

BY MR. BROWN:

Q. In your opinion?

A. I know of -- again, I don't know enough about the concentrations of secondhand smoke or the biology of secondhand smoke to suggest to me that I can have a reasonable opinion about that.

Q. Is there some concentration or duration that you could just assume and at that level, in your opinion, it would be a significant risk factor for lung cancer?

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf www.industrydocuments.ucsf.edu/docs/lghl0001

MR. LATHAM: I'm going to object. You're talking in the hypothetical, or you're talking about real world, or what are you -- I mean, hypothetical or real world?

MR. BROWN: Hypothetical.

MR. LATHAM: Hypothetical. Okay.

THE DEPONENT: Again, as one can imagine, and I – my laboratories have not studied substantially secondhand smoke. What studies we have conducted on secondhand smoke did not reveal any risks associated with exposure to secondhand smoke and animals that were exposed for substantial periods of time and concentrations at least one or two orders of magnitude greater than those typically found in a cigarette smoking environment, so based on that, I -- I don't really have a manner in which I can construe a concentration that would have a biological increase and relative risk.

BY MR. BROWN:

Q. I may have misunderstood your description of the animal tests that you described, the inhalation studies.

A. Uh-huh.

Q. Weren't those animals all being subjected

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

to secondhand smoke? They weren't smoking cigarettes, were they?

A. No. I'm sorry. Perhaps I misunderstood. I thought when we were talking about this we were working in the hypothetical about individuals being exposed --

Q. Well, we've left hypothetical. I'm back to the animals. The animal testing you described, wasn't that secondhand smoke?

A. It was aged and diluted side stream smoke, that's correct.

Q. That's secondhand smoke.

A. Well, there is a difference. I think people consider secondhand smoke or environmental tobacco smoke to be a combination of both aged side stream smoke, that emanating from the tip of the cigarette, and that smoke exhaled by smokers who are in the area in which the smoke is being generated.

Q. Is the age of a secondhand smoke to which a human is exposed a factor in deciding whether it's a significant risk factor?

A. I don't know.

Q. Do you have an opinion as to whether or not nitrosamines increase in the atmosphere when smoke is in the atmosphere from the end of a cigarette or from

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf www.industrydocuments.ucsf.edu/docs/lghl0001

exhaled smoke?

A. I don't have a strong opinion on that, no.

Q. Well, let's get to your designation, and your first expected subject is cigarette product evaluation. What do you expect to testify about concerning that particular subject?

A. In the area of product evaluation, which names an area of research within the research and development department, primarily focused now on in vitro biology assays and human smoking behavior assays, I would testify on the nature of those studies conducted there, a broad range of genotoxicity, cytotoxicity, and gene mutation assays. I would also comment on the quality of the laboratory, the manner in which the studies are conducted and interpreted, and I would also speak on the subject of human smoking behavior studies conducted in the product evaluation area. I can't say that that would be everything, but I think that would be the focus of my conversation.

Q. Well, with respect to your description of, if I heard you right, the testing which is involved in product evaluation, what are those tests?

A. Well, again, there are many tests. If we use the generic term product evaluation, for example, to mean how do we evaluate products, then I would

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf www.industrydocuments.ucsf.edu/docs/lghl0001

speak to you broadly on all the kinds of testing that we do and which I am an expert. I would talk to you about short-term in vitro biology and those subsets being cytotoxicity, gene expression, and genotoxicity, as well as even smoking behavior studies. If we talk about the area product development or product evaluation, that's about which I would speak. It's held in that department. If we speak more generally about product evaluation, then I would talk to you about additional biological assays that we use in animal studies and specifically inhalation studies, dermal tumor promotion studies, airways irritation studies but not limited to that. There are many other assays that we might discuss. Again, product evaluation will include chemistry. It would include evaluations of pesticides, so that would be a broader description of product evaluation. I think the difference here is, there are two definitions, that general one and the more specific area directed or as the vice-president Dr. Doolittle holds responsibilities.

Q. So you would describe all of those kinds of tests, and I assume you could tell us what the results were?

A. I will be glad to tell you results on

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf www.industrydocuments.ucsf.edu/docs/lghl0001

specific tests --

Q. Well, I'm talking about that what you expect to testify at the trial.

A. Uh-huh. I would discuss the results of some tests as they've applied to -- you know, whatever the topics under question would be.

Q. And would it be accurate to say that as a result of all of those tests that you would describe a product evaluation that your opinion would be twofold: (A) They indicate a dose response to cigarette smoke, in other words, less is better; and the second part being, you cannot evaluate the -- or quantify the degree to which there is less risk. Would that be accurate?

A. Thinking in the first part, I would assert that there is a dose response and that as -- as reductions in either the general makeup of cigarette smoke or specific changes in cigarette smoke are changed and reduced that there would be that dose response. In the other case, the ability for our scientists or scientists to project a quantitative difference in the risk of smokers based on these studies, I would not assert that we could identify quantitatively that difference in risk.

Q. In your answer about what your product

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

evaluation would be, you've said something about human patterns.

A. Human smoking behavior.

Q. That's what you said. Now, explain what you mean by human smoking behavior in the context of what you would describe in response to this first subject.

A. Human smoking behavior in our laboratory -- and that would include clinical studies as well -- would investigate how people chose to smoke cigarettes. We would understand how cigarettes are smoked so that we understand the yields of cigarettes under different smoking patterns. We would measure from smokers urine mutagenicity. For example, there's one study designed that occurs in the clinical studies area. We may also, in product evaluation, turn to research organizations or universities in the conduct of complex studies in smokers. I would discuss all of those issues.

Q. And after discussing any and all of those issues from human smoking behavior, would you offer up any opinions as to the degree of risk or the significance of the risk factor of R. J. R. cigarettes, commercial cigarettes?

MR. LATHAM: Object to the form of the

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

question, vague, I think, but subject to that, you can answer the question.

THE DEPONENT: I'm not sure I did understand, so if you could ask me again, please.

BY MR. BROWN:

Q. You described the tests. You described some results of some tests.

A. Uh-huh.

Q. And bottom line after all of that, would you offer any opinions one way or the other as to whether or not R. J. R. commercial brand cigarettes are a significant risk factor for lung cancer, and if so, what would that opinion be?

A. So that's, again, two questions. I would --

Q. Maybe only one.

A. True. I can't keep that question in my mind for some reason. If you would --

Q. Try again, sure. Okay. After describing all of the product evaluation that you will be describing under the number one subject here, which, for the record, I'll read, cigarette product evaluation.

A. Uh-huh.

Q. After describing all those tests and all

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf Source: https://www.industrydocuments.ucsf.edu/docs/lghl0001

those method evaluations, would you then have an opinion as to whether or not there is a significant risk factor for lung cancer coming out of the smoking of R. J. R. commercial cigarettes?

A. Yes, I would have an opinion.

Q. And what's that opinion?

A. I believe that the results of the battery of studies that we would conduct there and across all of our toxicology assays would support the assertion that cigarette smoking is a risk factor for lung cancer.

Q. You dropped my word significant. Was that significant that you dropped the word significant?

MR. LATHAM: Object to the form of the question. It's argumentative, and it's not even really a question.

MR. BROWN: Only mildly argumentative.

MR. LATHAM: Maybe so, but it's still argumentative.

BY MR. BROWN:

Q. Would your opinion be that R. J. R. commercial cigarettes are a significant risk factor for lung cancer?

A. Yes, that is my opinion.

Q. Let's go to Number 2. We have to move

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf www.industrydocuments.ucsf.edu/docs/lghl0001

through this quickly, or Otis is going to me how to get to Richmond. Product stewardship, what are you going to tell us -- what are you going to testify to at the trial about that?

A. I intend to discuss our area of product stewardship and the manner in which we conduct that practice, and as I mentioned in the past, that is the process by with which we determine or assure that we do not increase risk for our smokers who chose to smoke our products. It is the manner in which we make our cigarettes as safe as we can make them, and that is done by looking at a change, whether it be an unintended change or a purposeful change in our product and evaluating the ramifications of such a change through the review of literature, through the review of chemistry, through the review of biological assays be they short term or long term, and in some cases the use of human studies. The purpose of the entire product stewardship program is, again, to assure that we do not increase the risk for our smokers.

Q. Prior to 1966, do you have an opinion as to whether or not there were any changes in the Winston cigarette which increased the risk?

A. I don't have an opinion on that subject

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf Source: https://www.industrydocuments.ucsf.edu/docs/lghl0001

specifically at that time.

Q. Number 3, the toxicology of cigarette smoke and, quote, tar, unquote, what do you expect to testify on concerning that subject?

A. Again, that's a very broad subject, and I would talk to you about the -- and, of course, as I outline all of these, I'm not sure that I'm covering every point, but I'm trying to cover the major points. The toxicology of cigarette smoke and cigarette smoke tar would be the results of those studies that I have described to you and understanding to -- about regarding the chemistry studies that are conducted on cigarettes, the understanding of all of the biological assays that we conduct, and understanding of human studies, and understanding of the differentiation in some cases between whole smoke and condensate. It in many cases may overlap those responsibilities that I've described when we talked about product evaluation or product stewardship. We would rely upon our knowledge and our learning about toxicology of smoke and condensates and tar to make decisions in our product stewardship area as we move forward, so I think that would be a characterization of our understandings of toxicology and tar and smoke.

Q. Is it your opinion that in the burning

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

process in the R. J. R. cigarettes compounds are formed which increase the risk of lung cancer?

A. I think that -- I can concur with that, but I believe there is -- there are compounds formed in cigarette smoke, and there are many compounds in cigarette smoke, then --

Q. In your opinion -- I'm sorry.

A. That may result in an increase in risk for people who chose to smoke cigarettes.

Q. In your opinion, Doctor, is there any additive or additives which form with other components of the cigarette and create compounds which increase the risk of lung cancer?

A. Additives, I think, are those things that we chose to put in --

Q. Exactly.

A. -- to our tobacco.

Q. Right.

A. I don't think they're formed as you might have suggested.

Q. But I didn't mean to suggest it.

A. I'm sorry.

Q. Let me restate the question because it sound like I didn't state it very well.

A. Maybe I misunderstood.

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf www.industrydocuments.ucsf.edu/docs/lghl0001

Q. Is there any additive or group of additives which, in your opinion, in the burning process, formed along with anything else that happens to be in the cigarette besides the additives – form a compound which increases the risk of lung cancer?

A. Of course, the combustion of tobacco smoke is an extremely complex mechanism. What I believe is that the additives that we employ at R. J. Reynolds are deemed safe as they're used in our products today, both by our internal review and by external independent panels, as well as by health and human services. I think as used all the additives that are used in our products are -- in no way participate in the increase of risk to our consumers.

Q. So it's your opinion that there is no additive which, along with other components of cigarettes and in the burning process forms a compound which increases the risk of lung cancer?

A. That's correct. That is my opinion. I formulate that based on independent analyses of the NEAT compounds, our efforts to pyrolize those NEAT compounds to determine if they are from the combustion process, resulting changes in chemistry.

Q. Pyrol--- I'm sorry?

A. Pyrolize is to basically burn under less

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

than perfect oxygen concentrations. It's a form of combustion, and it's a form of combustion that may yield complex compounds from the burning of another substance. We do studies on the NEAT materials that as --

Q. What is that word?

A. NEAT, NEAT materials, the original material. Let's say it's the additives.

Q. How do you spell that word?

A. NEAT, N-E-A-T. We do studies on the starting materials as we deem necessary. We do this pyrolysis process on materials about which we may have some questions. We have added these materials to our cigarettes. We have evaluated commercial cigarettes both with and without additives and compared them, and based on all of those results, we've been unable to differentiate any degree of biological activity associated with the inclusion of additives. Beyond that, expert panels have reviewed the additives list that's submitted to health and human services at least for the last 15 or 16 years, and that expert panel has indicated that as used in cigarettes, additives do not increase the risk for people who chose to smoke those cigarettes.

Q. Can you identify every compound formed in

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

the burning process which increases lung cancer, the risk of lung cancer?

A. No, I can't. I don't think -- I know that I don't know what compounds contribute to that risk that is measured by epidemiologists when people chose to smoke.

Q. Describe the nature of the tests that you have conducted as a basis of your opinion that there is not one additive placed in cigarettes by R. J. R. which, in combination with other constituents of the cigarette, form a compound or compounds that increase the risk of lung cancer.

MR. LATHAM: I'm going to object to the form of the question. It's compound. It's multiple parts. Subject to that -- and it's probably been asked and answered, but if you can answer the question, feel free.

THE DEPONENT: Again, if you could repeat it for me, I'd appreciate it.

MR. BROWN: This time, I'm going to have to ask you to read it.

(Off-the-record conference.)

(The Court Reporter read the question commencing on page 87, line 7, and concluding on line 12.)

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf www.industrydocuments.ucsf.edu/docs/lghl0001

MR. LATHAM: Same objection, and I'm positive now it's been asked and answered.

BY MR. BROWN:

Q. Is that clear to you?

A. I think I can provide you with an answer.

Q. Okay.

A. Each of the additives that we chose to put with our tobacco in our cigarettes is first chosen to be at the lowest possible level.

Q. I'm sorry. What --

A. At the lowest possible inclusion level to provide that product differentiation that our consumers may chose to purchase. Of that, we do studies, both biological and chemical in nature, on the additive to determine whether or not as a NEAT material; that is, the material low, has the potential for biological activity. We combust that product to see whether or not chemicals are formed that might cause concern in our interpretation of potentials for increased risk. We have added, then, as we always do those additives to cigarettes, and we have tested the smoke from those cigarettes to observe for differences in chemistry that might be there as a result of the presence of those additives so that we know the chemistry of the cigarette before and after that

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf www.industrydocuments.ucsf.edu/docs/lghl0001

additive has been added and that additive has been burned as it would be done in a cigarette. We have also conducted complex biological studies, both in in vitro studies and in animals, to ask a question as to whether or not in a cigarette with additives and in a cigarette without additives were there any differences in the biological activities we observed in this battery of assays that we use to evaluate the relative cancer risk. We've also consulted with the literature, and other organizations have recently published work in which they have added complex quantities of additives to cigarettes, combusted those cigarettes as people would smoke them and asked the question in animals whether or not there were differences in biological activity. In all of those publications both by Gaworski originally and Lorillard and by Carmines who works with Philip Morris, those publications have indicated that there's no difference in the biological activities of cigarettes contain numerous additives or no additives. so as a -- I believe that there has been substantial testing, and again, there have been experts who have been asked independent of the tobacco industry as to their opinion regarding the biological activity or the potential to increase risk when these additives were

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

used in the amounts they're used in cigarettes, and those experts have offered the opinion that there's no increase in risk as these additives are used in cigarettes, so I form my opinion on that complex battery of work that was done around our additives.

Q. Have you conducted biological activity tests on commercial brand cigarettes, not changing that cigarette in any respect; in other words, going out and buying a pack of R. J. R. cigarettes, come back, take the cigarette out, and put the smoke through a biological activity test? Have you done that sort of testing?

A. Yes, we have.

Q. And does that kind of testing show biological activity?

A. Yes, it does.

Q. And significant enough to create a significant risk factor for lung cancer, correct?

A. You're asking a question whether I -- I'm sorry. I'm restating your question. We prepare commercial cigarettes and test them, and we've done them in the broadest range of studies, including short-term biology in animal studies, as the cigarettes are marketed and as they are changed and marketed.

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf www.industrydocuments.ucsf.edu/docs/lghl0001

Q. What do you mean by that?

A. Well, let's say that we had a commercial cigarette. We tested it, but we also compared it to a cigarette that had an intended change on it, so we knew the biological activity of the cigarette as it was marketed, and we also asked the question as to whether or not when we were going to change that cigarette and introduce it into the marketplace would the biology have been adversely affected.

Q. Your testing uses the commercial cigarette as it exists to compare the biological activity of the commercial cigarette against a cigarette which you manufacture with an intended change. Is that what you did?

A. That's correct, and part of what I've described as our stewardship program is, for example, should we have chosen to change Winston, we would have studied and did study Winston as it was available in the marketplace and Winston as we intended to market it, and an example would be when we intended to market without additives, so we had both the original Winston, that which was in the marketplace at that time, and the new Winston that was the one that does not contain additives, and we studied both and asked questions as to whether or not the absence of

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

additives would have changed the biological activity, and again, in those instances, we were unable to detect any differences in the biological activity.

Q. And your testimony that, as far as you're aware, if by the comparative test of the commercially sold cigarette against the potentially intended new manufacturing design shows an increase in the biological activity over the commercial cigarette, then you don't put it out to the public?

A. That's correct.

Q. Now, I'm not sure you answered my question before that. Is it correct to say that the biological activity in the commercial brand cigarette is -- creates a significant risk factor for lung cancer? I don't think that's a right question. Is it correct to say that the biological activity you detected in your testing of commercial brand cigarettes supports -- let me try again. Would you agree that the amount of biological activity you have found to exist in your commercial cigarettes is such that they constitute -- those cigarettes constitute a significant risk factor for lung cancer?

MR. LATHAM: Object to the form of the question. It's been asked and answered about 50 times. Subject to that, you can answer.

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

THE DEPONENT: The answer is yes. Let me explain.

BY MR. BROWN:

Q. Sure.

A. The broad range of biological and chemical measures that we make, including short term, long term, and in some cases, human studies, supports the concept that there is biological activity associated with cigarette smoke, and those biological activities measured in that broad range of studies and taken as weight of the evidence suggests to us that that activity would indicate that cigarette smoking would be a significant risk factor for lung cancer in smokers.

Q. Let's go to Number 4, which reads, for the purpose, specific biological testing that Reynolds has conducted on its cigarette products. What do you expect to testify with regard to that subject?

A. That's a -- I guess I was not concentrating well enough --

Q. Im sorry. You could read it. You could read it there.

(Off-the-record conference.)

BY MR. BROWN:

Q. Specific biological testing that Reynolds

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

has conducted on its cigarette products. I guess the first question I'd ask you is, list for us all the specific biological testing that Reynolds has conducted on its cigarette products.

A. And I would say, again, I would just willingly discuss both the style and the type of studies we've conducted, again very broad ranging biological measures, and I've listed them for you many times, but again, I'm not sure that I've gotten them all, but we have many tests that are both a chemical nature and a biological nature, and I would discuss not only those tests, but I would discuss the results of those tests where they would be appropriate.

Q. Are there any tests that fall outside in vitro or in vivo?

A. Chemical, I think.

Q. Chemical?

A. Chemical, physical, and biological in vitro and in vivo, and then if we -- in vivo may not include human studies. It would to me, but to be clear, then we would also discuss human studies that we've conducted as well.

Q. So there are two questions here, physical and human studies. Let's first ask you about physical.

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf https://www.industrydocuments.ucsf.edu/docs/lghl0001

A. Uh-huh.

Q. What do you mean by physical studies? Is that the same as chemistry, chemical?

A. No.

Q. What's the --

A. And, I mean, the physical studies means in my terminology those studies that we conduct to understand the characteristics of how the cigarette is made; that is, how hard is it to draw the air through the cigarette, what is the ventilation in the cigarette, what is the porosity of the paper, so we might make studies of the physical nature of those materials that go up in making a cigarette --

Q. I see.

A. – or how the cigarette performs when air is passed through it. Chemical would be those studies we would apply to the smoke that comes from the cigarette, as well as the tobaccoes and materials that might be on the tobaccoes. An example there would be pesticides, for example, so in the tobacco alone and then, of course, studying the smoke that comes from the cigarette, that would be chemistry, and there will be many more, and there's many aspects of the smoke that we would analyze as well as the aspect of the tobacco when we look at it.

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf www.industrydocuments.ucsf.edu/docs/lghl0001

Q. There's a second sub-part I wanted to ask you about, and it's gone out of my head.

MR. BROWN: Would you read back my question. Right at the end of my question there, I said there are two sub-parts, physical and -- what was the "and"?

(Off-the-record conference.)

(The Court Reporter read the question commencing on page 94, line 23, and concluding on line 25.)

THE DEPONENT: What's the question now?

MR. BROWN: As soon as she's ready.

THE DEPONENT: Oh, I see.

BY MR. BROWN:

Q. What do you mean by human studies in the context of your answer?

A. Again, we would discuss the results of our studies conducted in humans. Those studies might include, but certainly not limited to, human smoking behavior smoking studies, studies conducted with human urine mutagenicity assays in mind, studies that might involve the pathology of smoker's lungs, the biochemical measures conducted in smokers. There may be many others, bronchi-alveolar lavage fluid assessment, for example, lung function measurements.

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

Those would all be human studies.

Q. The lavage after bronchi-alveolar, what is that study, bronchi-alveolar lavage?

A. Bronchi-alveolar suggests a location in the lung.

Q. Right.

A. And lavage means to, from my perspective, wash out of the lung both chemicals and cells, and the washing out from the lung of those chemicals and cells results in materials that one might study and look for changes that occur. Biological activity might be found there as you look at the differences in biochemistry or the differences in the function and nature of the cells washed from the lungs.

Q. And these are smokers?

A. And these would be in smokers.

Q. R. J. R. smokers or --

A. In specific instances, as we've designed studies specifically, where an R. J. R. product might be studied, then, of course, one group of smokers would a person smoking an R. J. Reynolds' product. They might be compared to usual brand, whatever brands of cigarettes they chose to smoke. That would be an example. One might design many different studies where only Reynolds cigarettes are assessed.

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf www.industrydocuments.ucsf.edu/docs/lghl0001

Q. You've done all of those kinds of things?

A. I can't speak specifically to whether or -- I just don't know that we have done one where it would both be just R. J. Reynolds one and R. J. Reynolds two. Usually, it's such a design that we would study -- allow smokers to smoke their usual brand of cigarette and compare the biological effects that we observe when they smoke only a specific R. J. Reynolds cigarette.

Q. Is there a minimum length of time that a smoker has to smoke cigarettes or a minimum amount of cigarettes that they smoke before you put them into that study?

MR. LATHAM: Object to the form of the question.

BY MR. BROWN:

Q. I'm not sure you put them in that thing you use in the study --

MR. LATHAM: Object to the form of the question.

THE DEPONENT: Well, now my mind has slipped from the question, so I'm over 50 as well.

BY MR. BROWN:

Q. You don't look like it.

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf www.industrydocuments.ucsf.edu/docs/lghl0001

A. Thank you.

Q. The subject of these human studies, are they -- do they have to have a certain time that they smoke or a certain amount of cigarettes that they have smoked?

A. The straightforward answer is yes, but what that time is, I don't know. I'm not the expert in designing those studies. Those studies are often conducted by external medical doctors and research of universities, an example being University of Nebraska, for example, so the study protocol is a protocol that's designed by experts in these kinds of studies, medical doctors and people working with R. J. Reynolds. I can't give you a perfectly accurate answer on that. It would depend on the experts and their study design.

Q. And do those human studies develop test results that show a biology activity, biological activity, that indicate a significant risk factor for lung cancer?

A. To my understanding -- but again, I'm not an expert in the conduct of these studies -- that, first, these studies are looking for comparative changes, but the changes that are looked at are decided upon by experts who feel that those changes

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

may have implications regarding risk for lung cancer, changes in the pathology of the lung, changes in inflammation, or changes in the biochemistry of the lung bronchi-alveolar lavage fluid, are suggested to these experts that they are – they are suggestive of risk for smokers who chose to smoke cigarettes.

Q. When were the first of these human bronchi-alveolar lavage tests conducted?

A. I think scientists have been conducting bronchi-alveolar lavage studies for many decades.

Q. I'm talking about the ones you're referring to, that you've described as to how experts have described them, described the results.

A. Ones conducted by R. J. Reynolds.

Q. Or at their request or that they have reviewed, whatever. I mean, we've just been talking about a whole bunch of human studies.

A. Right.

Q. When were the first of those human studies done where it was found by the experts you've referred to that they indicated a risk factor for lung cancer?

A. I'm not understanding the question with clarity regarding whether or not these are studies that were conducted on behalf of R. J. Reynolds in some way, or are you talking about the scientific area

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

that would be associated with understanding smokers and the changes to their bodies.

Q. Well, let's take those tests which R. J. R. was involved somehow first.

A. Think those studies would be -- and again, this is a general area regarding the very first time they were conducted. I think throughout the '90s those studies have been conducted.

Q. Let's take the other side of the coin, the studies that have been conducted but R. J. R. has not been somehow involved. When were those studies first done?

A. I'm thinking back, and I don't think that I can give you a good solid answer. I know that it's been for some time, at least in perhaps 20 years.

Q. Okay.

A. But I can't give you any better answer than that.

Q. And when did R. J. R. get the results of those studies that -- in which they were not somehow involved?

MR. LATHAM: Object to the form of the question. It's completely over-broad and vague.

BY MR. BROWN:

Q. These studies have been going on for, you

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf www.industrydocuments.ucsf.edu/docs/lghl0001

estimate, 20 years. When does R. J. R. get the results? Right after the study?

MR. LATHAM: Object to the form of the question. It's vague. You can answer.

THE DEPONENT: I think R. J. Reynolds' staff would have availability to those studies at the same time the rest of the scientific community would, and those would have been when those results would have been published. I can't say when that was.

BY MR. BROWN:

Q. Now, let's see. Biological testing, we have the bronchi-alveolar lavage, L-A-R-D-G -- how do you go?

A. It's lavage, but you ask me to spell it, I really can't.

Q. How would we describe those studies so that if we were to request in a document request for that those studies be produced, how would you -- what would you understand we were asking for? What term would we use to do that?

MR. LATHAM: Object to the form of the question.

BY MR. BROWN:

Q. But how would we describe a

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf www.industrydocuments.ucsf.edu/docs/lghl0001

bronchi-alveolar lavage study so that we could say please provide for us all bronchi-alveolar lavage studies? Would that phrase be enough?

A. I think that would be adequate.

Q. And how would we describe the R. J. R. involved human studies? Would that be sufficient to provide all of that?

MR. LATHAM: Object to the form of the question. Human studies on what?

BY MR. BROWN:

Q. That we've just been describing.

MR. LATHAM: Object to the form of the question. It's vague.

BY MR. BROWN:

Q. I guess we're talking about human behavior. Is that what you call it?

MR. LATHAM: Object to the form of the question. It's still vague. You can answer.

THE DEPONENT: I think you would get -- if you used the terminology, human study, you would get all those studies that we would have conducted that will be associated with smoking.

BY MR. BROWN:

Q. Not only that R. J. R. conducted but also were conducted with some involvement by R. J. R.?

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf Source: https://www.industrydocuments.ucsf.edu/docs/lghl0001

MR. LATHAM: Object to the form of the question. You're asking him now legal questions in my opinion, and I don't think he's competent in answering that question.

BY MR. BROWN:

Q. I'm just asking for the factual question in the sense that I just want the term so that when we ask for those documents it will be clear what we're asking for and what terms you use for the human studies.

MR. LATHAM: That's been asked and answered. Subject to that, you can answer.

THE DEPONENT: I think the terminology human studies, human smoker studies, would be adequate to gain that information.

BY MR. BROWN:

Q. Now Number 4, Reynolds and my -- there's a copy problem on this document for some reason. Reynolds' four dash -- and I don't know what the next word is. Four step.

MR. LATHAM: Step.

BY MR. BROWN:

Q. Okay. Reynolds' four-step scientific methodology for evaluating progress and developing reduced risk products, would you describe what you

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf Source: https://www.industrydocuments.ucsf.edu/docs/lghl0001

expect to testify about on that Number 5 that I just read to you?

A. I would first describe to you what that four step methodology is, the manner in which we look at chemistry studies, biological and toxicology studies, and human studies, and independent scientific evaluation of those studies as we would form opinions regarding whether or not a newly developed product has the potential to reduce risk for smokers who chose to smoke those products. I would, in addition to that, describe to you the results of research that would show the utilization of these assays and the methods by which we interpreted them to draw our conclusions, and we would refer to the outcome of independent bodies who would have also reviewed that work and, in some instances, drawn the same conclusions as our own internal review.

Q. Would it be accurate to say that after describing the four-step process and after describing your results of those various tests that, at least in part your -- no, let's say your conclusion would be that there has been some risk reduction but you can't quantify how much?

A. I would say that we would draw the conclusion that some cigarettes -- for an example, our

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

Eclipse cigarette -- has the potential to reduce risk for lung cancer and smokers who chose to smoke that product. And again, if the term quantify means very precisely some number, you would be correct in assuming you cannot quantify that. If you mean quantify in the manner that we would suggest, that there would be a difference in risk for smokers who chose to smoke that product, then I would accept that we could quantify that.

Q. So what would your opinion there? Would you just be able to say there's a difference, or would you be able to say the difference is and then describe the degree of difference?

A. I would say that we would – we would assert that there would be a difference. The magnitude of that difference would be difficult for us to project.

Q. And would it accurate to say that with respect to all of these risk reduction test results that you would not be able to give an opinion as to whether or not the risk was measurable by relative risk concepts of epidemiology?

A. It is my view that when we would assert that a cigarette has the potential to reduce risk in the smoking population that should we be able to have

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

people smoke this cigarette for a period of time, say those periods of time where people need to smoke cigarettes to demonstrate risk in the population, then I believe these cigarettes would be detected by epidemiology studies as having a differential and reduced risk for lung cancer in that population.

Q. Hypothetically, though, just using some numbers, you couldn't say, for example, whether the relative risk would reduce to 10 or 9 or 9.8 or any other relative risk reduction, at least at this point, because you don't have the epidemiological tests to back it up?

A. I think you're right. We would not be able to differentiate such small differences in risk, but we would assert that there would be a substantial reduction in risk associated with the choice to smoke those products for a prolonged period.

MR. BROWN: We just ran out of subjects?

(Off-the-record conference.)

BY MR. BROWN:

Q. Have you ever smoked?

A. I've tried it as a young man, but I didn't chose to continue to do it.

Q. Good for you. Am I correct that you're not going to express an opinion as to whether the Winston

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf www.industrydocuments.ucsf.edu/docs/lghl0001

cigarette between 1954 and 1966 had any risk reduction resulting from anything that happened during that period?

MR. LATHAM: Object to the form of the question. Subject to that, you can answer.

THE DEPONENT: If you could repeat the question. I think I understand, but I prefer to --

BY MR. BROWN:

Q. I'm trying to determine -- I'm trying to find out if you agree that you will not offer an opinion that the Winston cigarette between 1954 and 1966 was reduced as for risk factor for lung cancer by any activity taken by R. J. R?

MR. LATHAM: Object to the form of the question. You can answer.

THE DEPONENT: Although I'm not familiar with the relative reductions in the amount of tar that came about from Winstons during that period that you've mentioned, '54 to 1966 --

MR. BROWN: Right.

THE DEPONENT: -- I would assert that general reductions may play a role in reducing cancer risk in those people who chose to smoke those cigarettes.

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf Source: http://www.industrydocuments.ucsf.edu/docs/lghl0001

BY MR. BROWN

Q. I take it you agree, though, that the Winston cigarette, circa 1954 to 1966, was a significant risk factor for lung cancer?

A. I believe it should have been a significant risk factor for lung cancer.

MR. BROWN: With that, I thank you.

THE DEPONENT: Thank you.

(Off-the-record conference.)

MR. LATHAM: I want to ask one question.

EXAMINATION

BY MR. LATHAM:

Q. For the record, this is Will Latham representing R. J. Reynolds in this case. I want to just get a clarification of one thing you said early on in the deposition, Dr. Mosberg, and that was related to product development efforts and what assumptions product developers made about cigarette smoking throughout the history of R. J. Reynolds' cigarette design and research, and the question is this: Is it your understanding that for purposes of product development that the cigarette designers at R. J. Reynolds have assumed that cigarette smoking was a cause of lung cancer?

A. That is my general belief.

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf
Source: https://www.industrydocuments.ucsf.edu/docs/lghl0001

MR. LATHAM: I have no further questions.

MR. BROWN: Neither do I.

(SIGNATURE RESERVED)

(DEPOSITION CONCLUDED AT 1:05 PM.)

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf
Source: https://www.industrydocuments.ucsf.edu/docs/lghl0001

C E R T I F I C A T E

I, ARNOLD T. MOSBERG, PH.D., D.A.B.T., do hereby certify that I have read and understand the foregoing transcript and believe it to be a true, accurate, and complete transcript of my testimony, subject to the attached list of changes, if any.

_____

ARNOLD T. MOSBERG, PH.D., D.A.B.T.

This deposition was signed in my presence by _____, on the _____ day of _____, 2002.

_____

Notary Public

My commission expires:

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf http://www.industrydocuments.ucsf.edu/docs/lghl0001

Russell Court Reporting, Inc (Page 1 of 2)
Post Office Box 507
Lewisville, North Carolina 27023

ERRATA SHEET

RE: LAWRENCE LUCIER and LAURIE LUCIER vs. PHILIP MORRIS, INCORPORATED, et al.

DEPOSITION OF: ARNOLD T. MOSBERG, PH.D., D.A.B.T.

Please read this transcript with care, and if you find any corrections or changes you wish made, list them by page and line number below. DO NOT WRITE IN THE TRANSCRIPT ITSELF. Return the Certificate and Errata Sheet to this office after it is signed. We would appreciate your prompt attention to this matter.

To assist you in making any such corrections, please use the form below. If supplemental or additional pages are necessary, please furnish same and attach them to this errata sheet.

Page ____ Line ____ should read:_____

Page ____ Line ____ should read:_____

Page ____ Line ____ should read:_____

Page ____ Line ____ should read:_____

Page ____ Line ____ should read:_____

Page ____ Line ____ should read:_____

Page ____ Line ____ should read:_____

Page ____ Line ____ should read:_____

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf www.industrydocuments.ucsf.edu/docs/lghl0001

Page ____ Line ____ should (Page 2 of 2)

read:_____

Page ____ Line ____ should

read:_____

Page ____ Line ____ should

read:_____

Page ____ Line ____ should

read:_____

Page ____ Line ____ should

read:_____

Page ____ Line ____ should

read:_____

Page ____ Line ____ should

read:_____

Page ____ Line ____ should

read:_____

Page ____ Line ____ should

read:_____

Page ____ Line ____ should

read:_____

Page ____ Line ____ should

read:_____

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf https://www.industrydocuments.ucsf.edu/docs/lghl0001

CERTIFICATE OF REPORTER

I, Dorothy M. Boggs, Registered Professional Reporter and Notary Public for the State of South Carolina at Large, do hereby certify that the foregoing transcript is a true, accurate, and complete record.

I further certify that I am neither related to nor counsel for any party to the cause pending or interested in the events thereof.

Witness my hand, I have hereunto affixed my official seal on February 9, 2002, at Forsyth County, North Carolina.

_____

Dorothy M. Boggs
Registered Professional Reporter
My commission expires August 30, 2003

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf
Source: https://www.industrydocuments.ucsf.edu/docs/lghl0001

http://legacy.library.ucsf.edu/tid/qtq07a00/pdf
Source: https://www.industrydocuments.ucsf.edu/docs/lghl0001